



# **NCTIP**

**National Center for Transportation and Industrial Productivity  
New Jersey Institute of Technology**

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**To: Camille Crichton-Sumners**

**Title: NCTIP Quarterly Reports**

**Time Period: Fourth Quarter, 2006**

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QUARTERLY PROGRESS REPORT**

<b>Project Title:</b> <b>Economic and Quality of Life Impacts of Route 21 Freeway Construction - Year V</b>	
<b>RFP Number:</b> 2001-08	<b>NJDOT Research Project Manager:</b> R Sasor
<b>Task Order Number/Study Number:</b> TO-35	<b>Principal Investigator:</b> Golub, Eugene / Dresnack, Robert
<b>Project Starting Date:</b> 01/01/2002 <b>Original Project Ending Date:</b> 12/31/2006 <b>Modified Completion Date:</b>	<b>Period Starting Date:</b> 10/01/2006 <b>Period Ending Date:</b> 12/31/2006

<b>Task</b>	<b>% of Total</b>	<b>% of Task this quarter</b>	<b>% of Task to date</b>	<b>% of Total Complete</b>
Phase I: Literature Review	3	0	100	3
Task 1: Pre-construction, economic conditions	4	0	100	4
Task 2: Familiarization with Route 21	4	0	100	4
Task 3: Familiarization with Context Design	4	0	100	4
Task 4: Familiarization with Baseline data	4	0	100	4
Task 5: Develop study methodologies	75	0	100	75
Task 6: Prepare interim annual reports	3	0	100	3
Task 7: Prepare quarterly / final reports	3	5	95	2.85
Final Report				
<b>TOTAL</b>	<b>100 %</b>			<b>99.9 %</b>

**Project Objectives:**

The objectives of this study as set forth in the RFP are to:

- (1) Determine the economic and quality of life impacts of the Route 21 missing link freeway construction on the communities it traverses.
- (2) Determine these impacts by using simple indicators that show evidence of change in economic conditions or quality of life.
- (3) Follow up on the baseline data collected in 2001 by NJDOT staff, by collecting information on the same indicators and public spaces once each year in Years 2002-2006; thereby, evaluating these impacts over a five year period.
- (4) Evaluate the communities' reaction to the "Context Sensitive Design" initiatives taken for this highway project, which utilized extensive CSD elements to enhance the quality of public space.
- (5) Evaluate the impacts on traffic volumes and characteristics of removing

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traffic from local streets.

**Project Abstract:**

Opened to traffic in December 2000, the “missing section” of the Route 21 Freeway in Clifton and Passaic (Hope Ave. to the Rt. 46 Interchange) was designed utilizing the “equivalent” to the CSD approach at that time and will be the highway project used for the evaluation of CSD. A great deal of planning and design work was done to enhance the quality and appearance of this roadway and to maximize positive impacts on and for the surrounding communities.

This research project will evaluate over a five year period how effective the CSD approach was in the design of the Route 21 Freeway. The evaluation will focus on economic and quality of life issues. The type of economic issues that may be reviewed include impacts on neighborhood, residential real estate values, the success of commercial enterprises in the area, demographic characteristics in the area, traffic safety, workload to police, fire, hospitals and other municipal services. The type of quality of life issues that may be reviewed include: impacts on noise in the neighborhood, air quality, aesthetics and viewscape, traffic flow and other factors of concern to the local population.

Public perception initially and over a five year period will be measured by surveys to be taken each year of the project. This is a most critical element in the study because success ultimately must be “seen” by the impacted public literally and figuratively. In addition, traffic counts will be taken to determine changes from pre-construction to post-construction conditions and variations over the five years of the study. Other published data and modeling will be utilized to measure changes in economic and quality of life impacts.

**1. Progress this quarter by task:**

2006 4th Quarter

A paper was prepared for submission to TRB. Paper was accepted.  
The analysis was completed and the final report was completed.

2006 3rd Quarter

Analysis of accident data, and sales data on real property continued.  
Surveys conducted with individuals who were active in the project design and discussion were further analyzed.

Revisionn of the final report were continued.

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2006 2nd Quarter

Analysis of accident data, and sales data on real property continued. Surveys were conducted with individuals who were active in the project design and discussion will be further analyzed.

A survey to query users of the parks and amenities added by the project was initiated in this quarter. Revision of the final report is progressing

2006 1st Quarter

Analysis of accident data, and sales data on real property continued. Surveys conducted with individuals who were active in the project design and discussion were analyzed. A survey to query users of the parks and amenities added by the project was prepared.

The structure of the final report is in the process of modification. A new cd will be provided at the quarterly meeting.

2005 4th Quarter

Analysis of accident data, and sales data on real property continued. Traffic counts were obtained at approximately twenty key locations to measure improvements as predicted by the original studies. Additional surveys were conducted with individuals who were active in the project design and discussion. Noise readings at key locations were taken to compare with original EIS. The 4th annual report was submitted.

2005 3rd Quarter

Analysis of sales data on real property continued. Surveys of businesses on Monroe & Parker streets were continued. New forms were generated to survey new businesses developed after the completion of the freeway. A survey to query users of the parks and amenities added by the project has been developed and will be used in the next quarter. Traffic counts have been undertaken at several new intersections to compare with pre-project projections. Analysis of the data gathered continued.

2005 2nd Quarter

Analysis of accident data, and sales data on real property

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continued. Surveys of businesses on Monroe & Parker streets were continued. A POWERPOINT presentation on the project was presented to NJDOT staff and at a conference in Lisbon. Analysis of the data gathered continued.

**2005 1st Quarter**

This quarter analysis of accident data, and sales data on real property continued. Surveys of businesses on Monroe & Parker streets were conducted. A POWERPOINT presentation on the project was prepared for a research paper and presentation to the NJDOT staff. Analysis of the data gathered continued.

**2004 4th QUARTER**

This quarter was spent analyzing data that has been gathered on traffic at key intersections, surveys of residents and statewide accident data in the area of the project. The format of the annual reports has been modified. the new format should be easier to read and understand since it is comprised of significant data.

**2004 3rd QUARTER**

Analysis of accident data, and sales data on real property will continue. Traffic counts were obtained at key locations to measure improvements as predicted by the original studies. Additional surveys were conducted with merchants at Botany Village. Work was done on updating and improving the prior and new annual report.

**2004 2nd QUARTER**

The accident data has been placed in a usable form and is being analyzed. Data at critical intersections is being obtained with regard to traffic. The interim annual report has been revised as to form.

**2004 1st QUARTER**

Analysis of accident data, and sales data on real property has been undertaken. Attempts were made to conduct in person surveys of homes along the Rt 46 corridor. This was not feasible and so the surveys were mailed to the homes.

**PRIOR QUARTERS** )This progress is recorded in chronological order from the project begining.)

Phase1 The literature search is complete.

Task3 Familiarization with CSD is almost complete. Additional work includes discussion with other NJDOT personnel as to how CSD was applied on this project.

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Task2 Familiarization with the Rt 21 design and Baseline Data is complete. The NJDOT data has been obtained and has been reviewed. Additional data is being developed from other local and County Sources.

Task4 The project team has completed review of NJDOT 2001 baseline data.

Task5 A photographic record of the project has been undertaken and is near completion. It includes photoscapes of the area in proximity of the project as well as photos of the areas thought to be of importance by the NJDOT. these records are compiled on CD's.

Professional staff from both communities were individually interviewed and a compilation is being developed. Further, the local merchant associations have likewise been interviewed.

Surveys have been sent to elected officials & professional staff in both municipalities. Individual surveys are being conducted with merchants in both municipalities.

Traffic counts are being conducted at key intersections as per NJDOT original studies.

Noise readings are being taken at key locations as per original NJDOT studies.

Data is being compiled for Clifton on all sales of properties and the variation in prices as well as the total assessed valuation of the town for the last 10 years. Similar data has been requested from Passaic.

Accident data in the two towns is in the process of being developed to demonstrate changes that have occurred in the last few years. Additional photography has been taken at important locations. Base photographic record is being digitized for a permanent record that is easily organized.

We are obtaining sales reports from City of Passaic. Surveys taken have been digitized and analyzed. An interim annual report has been submitted in draft form. This has been finalized this quarter.

Planning for the second year analysis and data gathering has been completed. The photographic record taken during the project has been digitized and has been organized into a usable computer file.

The Interim Annual Report has been reviewed by NJDOT, Clifton & Passaic and

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their comments included in the report.

Interviews were obtained from businesses along Main Avenue in both Passaic & Clifton.

A photographic record was taken along South St in Passaic.

State accident data was obtained for Clifton & Passaic.

Sales data of properties in Passaic & Clifton was obtained.

**2. Proposed activities for next quarter by task:**

Final editing upon review of NJDOT will be completed.

**3. List of deliverables provided in this quarter by task (product date):**

The draft 4th Annual Report was delivered

**4. Progress on implementation and training activities:**

None

**5. Problems/proposed solutions:**

**6. Budget summary:**

Total Project Budget	\$293,326.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$280,653.00
% of Total Project Budget Expended	95.68%



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QUARTERLY PROGRESS REPORT**

<b>Project Title:</b> <b>Salt Runoff Collection Systems</b>				
<b>RFP Number:</b> 995998		<b>NJDOT Research Project Manager:</b> Dr. Nazhat Aboobaker		
<b>Task Order Number/Study Number:</b> TO-56		<b>Principal Investigator:</b> Golub, Eugene		
<b>Project Starting Date:</b> 1 /1 /2005		<b>Period Starting Date:</b> 10/01/2006		
<b>Original Project Ending Date:</b> 12/31/2006		<b>Period Ending Date:</b> 12/31/2006		
<b>Modified Completion Date:</b> 9/30/2007				

  

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature search	3	5	100	3
1-Review state-of-practice in other states and countries	2	0	100	2
2-Analyze factors to address typical environmental issues	10	25	100	10
3a-Prioritize DOT's yard facilities based on receiving water	18	25	75	13.5
3b-Propose innovative technologies for salt containment	18	20	70	12.6
4-Recommendations for state-of-practice for future design	18	20	70	12.6
5-Economic methods for each design	19	25	50	9.5
6-Prepare Quarterly Progress and Final Reports.	12	20	60	7.2
Final Report				
TOTAL	100 %			70.4 %

**Project Objectives:**

- 1.Prioritize DOTs yard facilities based on geographic area and receiving water sensitivity
- 2.Develop methods to prevent runoff, control/treat runoff and truck/equipment washing facilities at the existing maintenance yards without endangering the environment
- 3.Determine state-of -practice for design and construction of new maintenance yards in future in terms of controlling salt runoff.

**Project Abstract:**

The New Jersey Department of Transportation has about 84 maintenance yards at different locations in New Jersey. These yards are facing the threats of uncontrolled runoff from the yards to the surrounding environment. Bureau of Facilities Engineering and Design-NJDOT, is concern about salt runoff from their equipment and garage facilities. The Department has identified typical environmental degradation issues relative to their maintenance yards. These

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are; salt spillage during unloading and loading trucks, and truck/equipment washing.

It is required to identify methods to prevent runoff, control/treat runoff, and state-of-practice for cleaning/washing vehicles/equipment that can be best accomplished at yards where no sanitary service is available with possible temporarily as well as permanent systems.

The proposed factors and issues will be considered in future design and construction of new maintenance yards.

**1. Progress this quarter by task:**

2006 4th Quarter

The study of the truck washing operation is progressing. The team developed an

approach to providing truck washing facilities across the state. This was presented to the three regional directors for comment.

BMP's were also presented to the three regional directors for their comment.

2006 3rd Quarter

Study of truck washing facilities continued.

The database of facilities were further reviewed for presentation format.

A standard design for a salt facility has been studied.

A meeting with regional coordinators took place to verify the completeness of the database and discussion of truck washing facilities.

The team has reviewed the four sites that have caused environmental problems to see best solutions and if there are commonalities in the sites.

2006 2nd Quarter

Study of truck washing facilities will be continued.

The database of facilities will be further reviewed for presentation format.

The team met with the DEP for further discussions on their regulations.

A standard design for a salt facility was worked on.

A meeting with regional coordinators took place to discuss the approach to be used for truck washing facilities.

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The team has initiated review the four sites that have caused environmental problems to see if there are commonalities in the sites.

**2006 1st Quarter**

Study of truck washing facilities will be continued and a recommendation was made at a meeting with NJDOT personnel.

The database of facilities was reviewed for presentation format.

The team set up a meeting with the DEP for further discussions on their regulations.

The database was summarized and evaluations made.

A meeting with regional coordinators will take place to verify the completeness of the database.

**2005 4th Quarter**

Gathering information on truck washing facilities has been completed and a recommendation for action is under study.

The database of facilities has been entered into the computer as a WORD document.

Site visits to the salt facilities has been completed.

**2005 3rd Quarter**

The literature search has been completed. Team is still awaiting responses from various states and countries.

The study of truck washing facilities has been continued. A site visit was made to Pennsylvania to observe a working facility.

The database of facilities has been initiated. Many site visits to salt facilities has been conducted. It is anticipated that all of the facilities will be accomplished by the end of this year.

**2005 2nd Quarter**

The literature search has been completed. Team is awaiting responses from

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various states and countries. The study of truck washing facilities has been continued. The database of facilities has been initiated. Six site visits to salt facilities has been conducted.

**1st Quarter 2005**

The literature search has been initiated. The internet search is almost complete and the state of the art in the field is well documented. Letters have been prepared and is being sent to other states and countries.

Documentation on truck washing facilities have been obtained and additional information is being sought.

Meetings have been held with NJDOT personnel and information and data has been gathered.

A meeting was held with NJDEP personnel responsible for the regulations on salt facilities. This meeting was very productive. NJDEP personnel were invited to attend quarterly meetings to maintain close contact.

Site visits of NJDOT salt facilities has been initiated.

**2. Proposed activities for next quarter by task:**

Study of truck washing facilities will be continued.

A standard design for a salt facility according to BMP's will be completed. will be completed.

**3. List of deliverables provided in this quarter by task (product date):**

**4. Progress on implementation and training activities:**

**5. Problems/proposed solutions:**

**6. Budget summary:**

Total Project Budget	\$201,282.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$161,050.00
% of Total Project Budget Expended	80.01%

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<b>Project Title:</b> <b>Development of Weekend Travel Demand and Mode Split Models</b>				
<b>RFP Number:</b> 2006-08		<b>NJDOT Research Project Manager:</b> Edward S. Kondrath		
<b>Task Order Number/Study Number:</b> TO-63		<b>Principal Investigator:</b> Liu, Rachel		
<b>Project Starting Date:</b> 1/4/2006		<b>Period Starting Date:</b> 10/01/2006		
<b>Original Project Ending Date:</b> 12/31/2007		<b>Period Ending Date:</b> 12/31/2006		
<b>Modified Completion Date:</b>				

  

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Review	5	20	100	5
Evaluate Existing Models in New Jersey	15	90	80	12
Survey State of Practice Outside of New Jersey	15	90	90	13.5
Prepare Interim Report	10	0	0	0
Develop Model Specifications	25	0	0	0
Demonstrate a Model Calibration	20	0	0	0
Monitor and Document	10	0	0	0
Final Report				
TOTAL	100 %			30.5 %

**Project Objectives:**

The purpose of this research is to specify an ultimate model that can be used to forecast weekend travel that incorporates the following processes: trip generation by trip type, time of day, origin-destination pattern, and mode choice. To derive the ultimate product of this project, the research team will undertake the following:

- 1.Examine the state of the art in model development for non-work, off-peak, and weekend travel;
- 2.Evaluate alternative multi-modal modeling approaches, explicitly considering the impacts of various factors such as congestion on mode shifts;
- 3.Research and evaluate available models and travel survey data at NJDOT, NJ TRANSIT and the local MPOs;
- 4.Identify data deficiencies and statistical validity of alternative approaches;
- 5.Develop requirements and standards for incorporating changes to

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accommodate weekend travel into existing model frameworks;

6.Recommend a course for the development of multi-modal weekend travel demand forecasting models suited to the needs of New Jersey;

7.Develop and calibrate new models, if permitted by available data, for incorporation into existing MPO, NJDOT and NJ TRANSIT model frameworks.

**Project Abstract:**

**1.Progress this quarter by task:**

As Planned

**2. Proposed activities for next quarter by task:**

Review travel demand models in NJ

Survey state of practice

**3. List of deliverables provided in this quarter by task (product date):**

**4. Progress on implementation and training activities:**

**5. Problems/proposed solutions:**

**6. Budget summary:**

Total Project Budget	\$254,621.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$30,011.00
% of Total Project Budget Expended	11.79%

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<b>Project Title:</b> <b>Development of Simulation and Prototype Data Warehouse Model for Evaluating ITS Projects</b>	
<b>RFP Number:</b> Special Project 2003	<b>NJDOT Research Project Manager:</b> Camille Crichton-Summers
<b>Task Order Number/Study Number:</b> TO-58	<b>Principal Investigator:</b> Chien, Steven I-Jy
<b>Project Starting Date:</b> 01/01/2005	<b>Period Starting Date:</b> 10/01/2006
<b>Original Project Ending Date:</b> 12/31/2005	<b>Period Ending Date:</b> 12/31/2006
<b>Modified Completion Date:</b> 12/31/2007	

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Task 1: Detailed Literature Review	5	0	100	5
Task 2: Developing Simulation Model for the Studied Network	30	15	100	30
Task 3: Design of Prototype Data Warehouse	10	10	90	9
Task 4: Evaluation of Selected ITS Strategies	40	20	100	40
Task 5 Final Report	15	80	70	10.5
Final Report				
TOTAL	100 %			94.5 %

**Project Objectives:**

- (1) Develop a microscopic traffic simulation model to evaluate the impact of potential ITS strategies for the studied network, and
- (2) Design a prototype data warehouse model as a reliable data center for storing, processing, and analyzing transportation related data.

**Project Abstract:**

A traffic micro-simulation model will be developed to evaluate the anticipated traffic congestion due to upcoming construction in the area of NJ Route 139 and the impact of the construction on the Portway's Northern Extension. The boundaries for the network are to be determined, but may be roughly bounded by the following highways:

- NJ Route 3 to the north
- NJ Route 21 to the west
- NJ Turnpike Interchange 14 with US Routes 1&9 to the south
- NJ 440 and US 1 & 9 to the east

This network will be finely defined within the boundaries of the analysis area, but would only include the major routes and arterials outside of the analysis area. The simulation model will be set up in way as to allow for future expansion, should further analysis be required on the outlying areas,

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such as the interchange between US 1&9 and NJ 3. As part of this proposal NJIT will work with the NJDOT as well as the area ITS Stakeholders group to test various traffic mitigation scenarios utilizing ITS simulated tools. The scenarios are: Traffic Signal Improvements, Promotion of Car/Van-pooling, Optimal Diversion of travelers to NJ Transit Hudson-Bergen Light Rail, PANYNJ's Path and NY Waterway and Yellow Taxi Ferry Systems, Variable Message Signs (to be used with Advanced Traffic Management Systems and Advanced Traveler Information Systems), Contra-flow lanes, etc. The use of TRANSMIT readers for traffic data is proposed. The NJIT team would co-ordinate with the NJDOT task member to select the different scenarios to be analyzed. Coordination meetings are proposed. The scenarios will be displayed as video clips suitable to be incorporated into PowerPoint presentations via AVI files.

The proposed work will be done in two phases. Phase I, encompassing Tasks 1 and 2, involves the NJ 139 simulation and will be done within the first four months from the date of award. Phase II, encompassing Tasks 3-5, will be completed in months 5 to 12 from the commencement of the project.

**1. Progress this quarter by task:**

- Set of scenarios completed through discussions the NJDOT officials
- Simulation of scenarios have been completed for multiple construction stages and mitigation schemes, including detouring options, signal controller modifications, turn restrictions, and restriping of lanes
- Simulations and results were shared with NJDOT officials through presentations in several different meetings
- The final set of mitigation scenarios have been completed and are quantitatively compared and summarized

**2. Proposed activities for next quarter by task:**

- Simulation model will be documented in the report
- Simulation results will be summarized in the report.
- Delivery of the Draft report
- Finalization and submittal of Final Report
- Delivery of simulation models (on CD or DVD)

**3. List of deliverables provided in this quarter by task (product date):**

Presentation of developed simulation network and simulation of tested scenarios

**4. Progress on implementation and training activities:**

None

**5. Problems/proposed solutions:**

None



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**6. Budget summary:**

Total Project Budget	\$160,021.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$156,241.00
% of Total Project Budget Expended	97.64%

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<b>Project Title:</b> <b>Variability of Travel Times on New Jersey Highways</b>	
<b>RFP Number:</b> 2005-14	<b>NJDOT Research Project Manager:</b> Robert Sasor, NJDOT
<b>Task Order Number/Study Number:</b>	<b>Principal Investigator:</b> Chien, Steven I-Jy
<b>Project Starting Date:</b> <b>Original Project Ending Date:</b> <b>Modified Completion Date:</b>	<b>Period Starting Date:</b> 10/01/2006 <b>Period Ending Date:</b> 12/31/2006

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Search	5	20	20	1
Comprehensive and Focused Literature Review	5	0	0	0
Identify Suitable Technologies and Methodologies	5	0	0	0
Data Collection	40	0	0	0
Travel Time Estimation	15	0	0	0
Average Daily Non-recurrent Delay Estimation	15	0	0	0
Identification of Congested Highways with High Variation	10	0	0	0
Final Report	5	0	0	0
Final Report				
TOTAL	100 %			1.0 %

**Project Objectives:**

- (1) To measure travel times for repetitive day-to-day trips in the AM peak period on 15-20 congested New Jersey highways.
- (2) To study the variability of travel times on these highways and determine good estimates of non-recurring delay from incidents and other sources.
- (3) To identify which of these highways have problems with high variability in day-to-day travel times to work.

**Project Abstract:**

One of the most significant concerns for drivers going to work is the variability and reliability of their travel time. Travel time loss from unexpected delays results in lost time from work. Frequent but irregular delays make it difficult for drivers to plan when to leave for work. The reliability of travel times is being used as a new performance measure to evaluate traffic congestion and measure non-recurring delay. Reliability of travel times can be measured by the statistical variation and by the percent of time above a given threshold of what is considered normal delay time. Average daily non-recurring delay can be estimated by multiplying VMT from the

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NJCMS by the average time above the threshold time for the sections traveled. The variability of travel times probably has a greater effect on travel than the average or typical travel time.

The variability of travel times needs to be studied for some of New Jersey's congested highways to obtain better estimates of non-recurring delay from incidents and other sources, and to identify problem highways with high variability in day-to-day travel times to work. The findings would guide NJDOT staff in making highway improvements and implementing strategies to reduce congestion and incident delay along these problem roads.

**1. Progress this quarter by task:**

- Conducting literature

**2. Proposed activities for next quarter by task:**

- Conduct literature review
- Study identified sites
- Recruit student/staff for data collection
- Purchase equipment GPA/PDA units

**3. List of deliverables provided in this quarter by task (product date):**

**4. Progress on implementation and training activities:**

**5. Problems/proposed solutions:**

**6. Budget summary:**

Total Project Budget	\$345,076.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$0.00
% of Total Project Budget Expended	0.00%

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QUARTERLY PROGRESS REPORT**

<b>Project Title:</b> <b>Development of New Jersey Rates for NJCMS Incident Delay Model</b>				
<b>RFP Number:</b> 2005-02		<b>NJDOT Research Project Manager:</b> Robert Sasor		
<b>Task Order Number/Study Number:</b> TO-66		<b>Principal Investigator:</b> Chien, Steven I-Jy		
<b>Project Starting Date:</b> 1/1/2006		<b>Period Starting Date:</b> 10/01/2006		
<b>Original Project Ending Date:</b> 12/31/2006		<b>Period Ending Date:</b> 12/31/2006		
<b>Modified Completion Date:</b> 9/30/2007				

  

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Search	5	0	100	5
Review the Current Practice of NJCMS	5	0	100	5
Comprehensive Literature Search	5	0	100	5
Technology Transfer	5	20	60	3
Develop NJCMS Incident Database	35	10	40	14
Development of Robust Models for Incident Rates and Durations	10	10	20	2
Develop a Procedure to Maintain the Database	5	0	0	0
Determine Reasonably Accurate Incident Rates and Duration Estimates	20	10	20	4
Feasibility and Cost/Benefit Analysis	10	0	0	0
Final Report	10	0	0	0
Final Report				
TOTAL	100 %			38.0 %

**Project Objectives:**

- Determine if and how existing incident reports and databases can be used to generate good, New Jersey specific estimates of incident rates, response times, and clearance times for both peak and off-peak periods.
- Determine if new data in the form of actual field observations of incidents (from the beginning to the end of an incident) will be reasonable and useful to supplement and tie together the existing data.
- Develop an up-to-date incident database to store the information required and generate reasonably accurate estimates of inputs required by the NJCMS model.
- Conduct a cost and benefit analysis of various methods and technologies to collect continuous incident related data for the database developed in this project.

**Project Abstract:**

The Congestion Management System used by the New Jersey Department of

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Transportation (NJCMS) contains a model that estimates the non-recurring delay that occurs from incidents on highways. The NJCMS model uses rates for incident types that were determined from national studies. To make better predictions of non-recurring delay for New Jersey highways, NJ specific rates are needed. These incident rates should be developed for the nine categories of incidents for peak and off-peak periods (fatal, personal injury, property damage, mechanical/electrical, stall, flat tire, abandoned, debris, other). In addition, percent blockage of lanes and shoulders, percent capacity remaining, response time, and clearance times need to be determined for incidents. While various incident reports exist such as police reports, and various Traffic Operations reports, they do not provide data for the NJCMS model.

A feasibility study is required to determine if and how police reports, Traffic Operations databases, Emergency Service Patrol records, and other existing incident data can be utilized to provide estimates of the input parameters needed for the NJCMS non-recurring delay model. This study would decide if new data in the form of actual field observations of incidents (from beginning to end) would be reasonable and useful to supplement and tie together the existing data. If so, the feasibility and cost effectiveness of various methods and technologies to collect this continuous incident observation data would be examined.

**1. Progress this quarter by task:**

- Prepared and submitted the revised report and an electronic file, which contain missing capacity and volume in links NJCMS database to NJDOT.
- Conducted an investigation and submitted the results in electronic format of milepost missing records statistics in NJDOT crash records, TOC incident data, and ESP data.
- Collected and reviewed NJTP and GSP incident data.
- Assigned NJCMS number to all collected database including NJTP, GSP, TOC incident data, and NJDOT crash records.
- Reviewed and checked overlapped records among different data sources.

**2. Proposed activities for next quarter by task:**

- Design NJCMS incident database
- Calculate the preliminary incident rates and duration estimates
- Develop a procedure to maintain the database

**3. List of deliverables provided in this quarter by task (product date):**

None.

**4. Progress on implementation and training activities:**

None.

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**5. Problems/proposed solutions:**

None.

**6. Budget summary:**

Total Project Budget	\$198,993.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$75,867.00
% of Total Project Budget Expended	38.13%

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<b>Project Title:</b> <b>Stability and Accuracy of HCM LOS in Darkness and Adverse Weather</b>				
<b>RFP Number:</b> 2003-23		<b>NJDOT Research Project Manager:</b> Tony Chmiel		
<b>Task Order Number/Study Number:</b> TO-64		<b>Principal Investigator:</b> Chien, Steven I-Jy		
<b>Project Starting Date:</b> 1/1/2006		<b>Period Starting Date:</b> 10/01/2006		
<b>Original Project Ending Date:</b> 12/31/2007		<b>Period Ending Date:</b> 12/31/2006		
<b>Modified Completion Date:</b>				

  

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Search	5	95	100	5
Literature Review	5	30	100	5
Study the accuracy of the current Highway Capacity Manual	10	20	60	6
Develop and test alternative methods and procedures for field data collection	30	30	40	12
Perform the approved methods and procedures for estimating travel times	15	10	20	3
Enhance HCM on estimating LOS's in darkness and adverse weather	15	0	0	0
Improving transit schedule adherence through recommended methods	15	0	0	0
Final Report	5	0	0	0
Final Report				
TOTAL	100 %			31.0 %

**Project Objectives:**

- (1) Understand the accuracy of the derived current Highway Capacity Manual Levels of Service for a variety of roadways and investigate their sensitivity to the variables that determine them.
- (2) Determine how adverse weather and conditions of darkness and sun glare impact the capacity and level of service of state highways and the frequency of these occurrences.
- (3) Determine capacity levels at which traffic flows become unstable and measure the relationship between capacity and travel time variation that impact bus on time performance.
- (4) Recommend areas where the design of highway improvements, highway maintenance operations and traffic operations can be modified and/or improved, especially to aid in maintaining reliable bus schedules and reduce bus schedule conflicts.

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**Project Abstract:**

Currently, Highway Capacity Manual (HCM) levels of service (LOS's) are used to estimate the expected free flow traffic conditions on roadways. To operate reliably at a speed of 55 mph, for example, the maximum flow of passenger cars is set by the HCM at 2250 per hour per lane. This equates to an average interval between cars of 1.6 seconds.

Drivers are taught, however, to increase their intervals when driving in darkness and/or precipitation. In addition, some of our most heavily congested roads run east and west, and drivers can experience significant sun glare in morning and evening peak hours. Since much commuting occurs in hours of dawn/sunset/darkness and/or adverse weather, using current HCM LOS's will overstate the actual capacity that can be reliably achieved on New Jersey roads.

This research can help in designing highway improvements. It will provide better predictions of traffic capacity and LOS and more reliable travel times for buses, which will aid in reducing congestion by making transit a more attractive alternative.

There is a need to determine the capacity of per lane per hour of free flow traffic conditions on roadways under different lighting and different environmental conditions - dawn, sunset, darkness, rain (various rates), snow (wet road surface, accumulating on the surface, plowed, salted, icy spots, etc.). First one needs to understand the accuracy of the derived current Highway Capacity Manual Level of Service and to determine a set of Levels of Service that accurately predict capacity for the adverse weather driving conditions. This information is especially needed by NJ Transit to predict reliable bus running times to maintain and attract ridership.

**1. Progress this quarter by task:**

- Selected study roadway segments or transit routes for this study - 7 locations were selected.
- Visited selected location and transit routes.
- Identified data sources and types of data to be collected - Speed, volume, and headway.
- Developed setups for data collection (e.g., camcorder installation, 3 data collection team organized and trained. etc)
- Verified data analysis process using Autoscope 2004.
- Purchased 3 camcorders, 3 back-up batteries, and USB hard drives to store the data.



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**2. Proposed activities for next quarter by task:**

- Purchase JAMAR softwares for converting GPS coordinates to Travel Time
- Purchase PDAs & GPS receivers
- Train students to collect traffic and transit data
- Conduct data collection at the studied sites

**3. List of deliverables provided in this quarter by task (product date):**

**4. Progress on implementation and training activities:**

**5. Problems/proposed solutions:**

**6. Budget summary:**

Total Project Budget	\$305,862.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$79,597.00
% of Total Project Budget Expended	26.02%

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<b>Project Title:</b> <b>Alternative Performance Measures for Evaluating Congestion - Congestion Analysis Model Update and Maintenance</b>	
<b>RFP Number:</b>	<b>NJDOT Research Project Manager:</b> Robert Sasor, NJDOT
<b>Task Order Number/Study Number:</b> TO-62	<b>Principal Investigator:</b> Spasovic, Lazar
<b>Project Starting Date:</b> 12/01/2005	<b>Period Starting Date:</b> 10/01/2006
<b>Original Project Ending Date:</b> 03/01/2006	<b>Period Ending Date:</b> 12/31/2006
<b>Modified Completion Date:</b> 03/31/2007	

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Task I-1: Revisions of Software Output Files	15	55	95	14.25
Task II-1: Revision of software to include input of CMS intermediate output files for person trips and non-recurring delay	15	65	100	15
Task II-2: Addition of user options to run software with additional CMS files or parameters for days in year, non-recurring delay, and persons per vehicle	15	65	100	15
Task II-3: Documentation of software changes (new inputs and options)	10	55	70	7
Task II-4: Addition of programmed outputs showing numbers of persons, drivers, and costs per person and other data or measures to be defined	10	50	50	5
Task II-5: Improvement of the layout of output tables	10	75	100	10
Task II-6: Technical support for loading and running software and review of output results	10	50	50	5
Task II-7: Assist NJDOT staff in preparing a report that summarizes results of the Congestion Analysis Model	10	50	50	5
Final/Interim Report	5	50	50	2.5
Final Report				
TOTAL	100 %			78.8 %

**Project Objectives:**

The objectives of this project are the following:

- a) Update the Congestion Analysis Model to meet NJDOT's requirements for additional output data;
- b) Assist NJDOT personnel in updating the program inputs and parameters
- c) Provide technical support for loading and running the software; and
- d) Review and assist in the analysis of the results.

**Project Abstract:**

In order to quantify traffic congestion and its impacts on New Jersey's

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motorists, New Jersey Institute of Technology (NJIT) developed the Congestion Analysis Model, a computer software tool that estimates congestion costs, congestion related travel delay, and mobility indicators for New Jersey highways. The key advantage of NJIT's model over other computer models developed for the same purpose is that it uses the New Jersey Congestion Management System (NJCMS) database to calculate travel delays and other congestion indicators. All the inputs, such as demographics, income statistics, vehicle occupancies, and recurring/non-recurring delay ratios, are New Jersey specific and are calculated based on the NJCMS for each of the 21 counties and three facility types: freeways, principal arterials, and other arterials. The software was used to develop quantitative measures of congestion presented in the Final Report for the study titled Alternative Performance Measures for Evaluating Congestion. The results of this study were presented to the general public via coverage by several newspapers, television, and radio news programs, as well as through the NJIT website (<http://www.transportation.njit.edu/>). Important task of quantifying road congestion in New Jersey continues with this study. The purpose of this project is to provide software updates for the Congestion Analysis Model and assist NJDOT staff with running the software and performing congestion analysis.

**1. Progress this quarter by task:**

- User interface has been redesigned to reduce number of screens and steps required to update the database and settings.
- Data-flow has been improved through direct loading of appropriate CMS files in DBF format.
- Redesigned peak period selection by picking starting and ending hours from the drop-down list for AM and PM.
- Calculation procedures are separated from reporting function; this allows users to run different levels of reports without doing all the calculations from scratch.
- Calculation process has been revised to match the current method of calculating congestion measures in NJCMS, and by NJDOT's staff. This allows for comparison of Congestion Model's outputs with other data derived by NJDOT using same data sources.
- Output tables have been redesigned to meet the reporting needs defined by NJDOT.
- In order to reduce number of required inputs and be more practical at the same time, average fuel cost, number of days per year, and average truck cost per hour, are all entered as statewide averages, instead of county-specific averages as it was the case in the previous version of the software.
- Value of time is now being considered as a statewide average, rather than county-specific number as it was the case before. The main reason for this

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change is that it is not reasonable to assume that all traveling public driving on a county's roads have the value of time equal to that particular county's average income per capita.

- New software design has been presented to NJDOT Bureau of Systems Development and Analysis. Some issues that require further attention have been identified and they be addressed in the next quarter.

**2. Proposed activities for next quarter by task:**

- Provide DBF output with the field format consistent with needs for GIS mapping;
- Finalize design of the facility level reporting module and output worksheet;
- Finalize inclusion of graphs into the output worksheets;
- Update the User Manual;
- Write the Final Report.

**3. List of deliverables provided in this quarter by task (product date):**

**4. Progress on implementation and training activities:**

**5. Problems/proposed solutions:**

**6. Budget summary:**

Total Project Budget	\$29,957.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$22,233.00
% of Total Project Budget Expended	74.22%

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<b>Project Title:</b> <b>Parking Management and Architectural Development Strategy</b>	
<b>RFP Number:</b> 2003-30	<b>NJDOT Research Project Manager:</b> Lad Szalaj
<b>Task Order Number/Study Number:</b> TO-54	<b>Principal Investigator:</b> Sollohub, Darius
<b>Project Starting Date:</b> 01/01/2004 <b>Original Project Ending Date:</b> 12/31/2006 <b>Modified Completion Date:</b> .	<b>Period Starting Date:</b> 10/01/2006 <b>Period Ending Date:</b> 12/31/2006

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Search and State of the Practice	10		100	10
Project Definition	10		100	10
Develop Database of Existing and Proposed Facilities	10		100	10
Case Study Selection	10		100	10
Develop Design Guidelines and Management Standards	30	5	95	28.5
Design Testing	30		100	30
Final Report				
TOTAL	100 %			98.5 %

**Project Objectives:**

To Develop Guidelines for the Design and Management on NJTransit Parking Facilities adjacent to Rail Facilities.

**Project Abstract:**

Activities will include two graduate design studios, one at Rutgers and one at NJIT. In addition, several symposia will be held at which experts in the field will be invited to comment on the process. Work will commence in September of 2004 and conclude in December of 2006.

**1. Progress this quarter by task:**

Project is in Final Report writing phase. NJT (project customer) has requested a smaller community-oriented document be produced to accompany final report. To do this, NJIT team has asked for a no-cost extension and budget modification.

**2. Proposed activities for next quarter by task:**

Complete Project.

**3. List of deliverables provided in this quarter by task (product date):**

ULI Advisory Services Panel  
Design Testing Presentations

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Draft Report

**4. Progress on implementation and training activities:**

**5. Problems/proposed solutions:**

rebudgeting matriculated students to be consultants

**6. Budget summary:**

Total Project Budget	\$293,000.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$205,304.00
% of Total Project Budget Expended	70.07%

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<b>Project Title:</b> Medical Review Case Reporting at MVC				
<b>RFP Number:</b> 2005-12		<b>NJDOT Research Project Manager:</b> Nazhat Aboobaker		
<b>Task Order Number/Study Number:</b> TO-65		<b>Principal Investigator:</b> Rotter, Naomi G.		
<b>Project Starting Date:</b> 1/1/ 2006		<b>Period Starting Date:</b> 10/01/2006		
<b>Original Project Ending Date:</b> 12/31/2006		<b>Period Ending Date:</b> 12/31/2006		
<b>Modified Completion Date:</b>				

  

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literture review	15	15	100	15
Development of the taxonomy	10	0	100	10
Development of the survey instrument	10	0	100	10
Choice of the sample	10	0	100	10
Conduct of the survey	15	0	100	15
Summary of the survey results	10	90	100	10
Deveopment of conclusions and best practices	10	90	100	10
Final Report	20	100	100	20
TOTAL	100 %			100.0 %

**Project Objectives:**

- 1.Review policies, law, and regulations adopted by different States
- 2.Identify best practices and methods used by other states
- 3.Recommend model reporting methods for MVC
- 4.Select the best effective alternate.
- 5.Propose a policy or regulation to mandate and encourage reporting of drivers for both basic and CDL licensing

**Project Abstract:**

The Motor Vehicle Commission of New Jersey faces the problem of underreporting of high risk and/or unsafe drivers to its Driver Review Bureau and seeks a more effective way to encourage reporting of high risk drivers. This research reviewed the various medical reporting procedures in each of the fifty states and evaluated the procedures in terms of their ability to identify high risk drivers. In doing this, the researchers will covered those best practices in reporting and the statutory authority which supports those practices. By building taxonomy of medical review procedures, we will identified those states which have the most aggressive medical review procedures. These states along with others selected in consultation with the NJ MVC Medical Review Unit, formed the base for a sample of 17 states that were interviewed regarding models of reporting and their effectiveness. Using these data, the

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researchers proposed recommendations for the medical review process for licensed drivers.

**1. Progress this quarter by task:**

Task 1: Literature Review: The literature search used using several databases at NJIT's Van Houten Library. The major databases we used included: TRIS, Medline, Lexus-Nexus, EBSCO Research Databases, Science Direct, and JStor. Other sources included searching the sites of the various University Transportation Research Centers, NHTSA, AASHTO, AAMVA, and NJDOT Research Home

Page. This task continued throughout the entire project to make sure we added recently published sources. This task has been completed.

Task 2: Development of the Taxonomy – We have recoded the AAMVA survey of medical review procedures and evaluated each state according to our new code. This recoding gave numerical values for each state so that those with high scores represented states with more active and aggressive medical review procedures. Based on the outcomes, we grouped states with similar scores and identified states to be included in the sample. We have already obtained a list of all medical review directors for the 50 states, District of Columbia and Canadian Provinces. These have been entered into a database. This task has been completed.

Task 3 & Task 4: Development of survey instrument and Choice of the Sample The survey instrument was developed in consultation with the Contract Customer and the Project Manager. The sample was developed with similar consultation. This task has been completed.

Task 5 & Task 6. Conduct of survey and Summary of survey responses. Letters were mailed to twenty-three jurisdictions requesting their participation in the survey. Follow up phone calls were made. Of the twenty-three jurisdictions, seventeen responded and seventeen interviews have been completed. For each completed interview, transcripts have been completed and an analysis has been performed comparing jurisdictions on key variables. This task has been completed.

Task 7 & Task 8. Development of conclusions and best practices and the Final Report. Those practices which related to more effective referral and other medical review processes were identified through analysis of the survey. The final report has been completed and submitted to our NJMVC customer, Kathy Higham and our project ma

**2. Proposed activities for next quarter by task:**

Project Completed

Task 1 – Literature Review: This has been completed.



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TASK 2 –Development of the Taxonomy – This activity is completed and the final results have been presented to MVC Medical review unit for Comment.

Task 3 & Task 4: Development of survey instrument and Choice of the Sample:  
This activity has been completed

Task 5 & Task 6. Conduct of survey and Summary of survey responses. The conduct of the survey and the analysis is completed.

Task 7 & Task 8. Development of conclusions and best practices and Draft of the Final Report. Following analysis of the survey, the researchers will presented a summary of the best practices in identifying medically at risk drivers and the alternative arrangements for dealing with them (e.g. training, restricted license, loss of license) as well as problems that are associated with various arrangements. The Final Report was submitted in December.

**3. List of deliverables provided in this quarter by task (product date):**

TASK 6. Summary of survey results

Product: Working paper summarizing the results of the survey.

Task 7. Development of conclusions and best practices

Product: Presentation to MVC Client

TASK 8. Final report

Product: Final Report

**4. Progress on implementation and training activities:**

No Implementation and Training Activities have taken place.

**5. Problems/proposed solutions:**

No extraordinary problems have been encountered in the project

**6. Budget summary:**

Total Project Budget	\$127,480.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$109,448.00
% of Total Project Budget Expended	85.86%